

I CLAIM:

1 1. A method for treating gastritis and peptic ulcer disease comprising:

2 (a) administration of an oral liquid dosage form comprising:

3 (i) a first material selected from the group consisting of a bile

4 acid, an aqueous soluble derivative of a bile acid, a bile acid salt, a bile acid conjugated

5 with an amine by an amide linkage, and combinations thereof;

6 (ii) a second material selected from the group consisting of an

7 aqueous soluble starch conversion product and an aqueous soluble non-starch

8 polysaccharide; and

9 (iii) water,

10 wherein the first and second materials both remain in solution for all pH values of the

11 solution within a selected range of pH values.

1 2. The method of Claim 1 wherein the dosage form is selected from

2 the group consisting of a syrup, a thick syrup, and a paste.

1 3. The method of Claim 1 wherein the oral liquid dosage form

2 additionally comprises a bismuth compound in a pharmaceutically effective amount.

1 4. The method of Claim 3 wherein the bismuth compound comprises

2 an aqueous soluble reaction product between a bismuth ion and a chelator.

1 5. The method of Claim 4 wherein the chelator is selected from the
2 group consisting of citric acid, tartaric acid, malic acid, lactic acid and eidetic acid and
3 alkalies.

1 6. The method of Claim 5 wherein the bismuth compound is selected
2 from the group consisting of an ammonium salt of bismuth sulphate, an ammonium salt
3 of bismuth citrate, and bismuth sodium tartrate.

1 7. The method of Claim 1 wherein the first material is selected from
2 the group consisting of ursodeoxycholic acid, chenodeoxycholic acid, cholic acid,
3 hyodeoxycholic acid, deoxycholic acid, 7-oxolithocholic acid, lithocholic acid,
4 iododeoxycholic acid, iocholic acid, tauroursodeoxycholic acid, taurochenodeoxycholic
5 acid, taurodeoxycholic acid, glycoursoodeoxycholic acid, taurocholic acid, glycocholic
6 acid, their derivatives at a hydroxyl or carboxylic acid group on the steroid nucleus, their
7 salts, or their conjugates with amines.

1 8. The method of Claim 1 wherein the second material is selected
2 from the group consisting of maltodextrin, dextrin, corn syrup corn syrup solid, soluble
3 starch, and dextrans.

1 9. The method of Claim 1 wherein the the oral liquid dosage form
2 comprises one or more additional bile acids, aqueous soluble derivatives of bile acid, bile
3 acid salts, and amine-conjugated bile acids conjugated by an amide linkage.

1 10. The method of Claim 1 wherein the the oral liquid dosage form
2 additionally comprises a least one emulsifying agent.

1 11. The method of Claim 10 wherein the emulsifying agent is selected
2 from the group consisting of guar gum, pectin, acacia, carrageenan, carboxymethyl
3 cellulose sodium, hydroxymethyl cellulose, hydroxypropyl cellulose, methyl cellulose,
4 polyvinyl alcohol, povidone, tragacanth gum, xanthan gum, and sorbitan ester.

1 12. The method of Claim 1 wherein the oral liquid dosage form
2 additionally comprises at least one pharmaceutical in a pharmaceutically effective
3 amount.

1 13. The method of Claim 12 wherein the pharmaceutical is selected
2 from the group consisting of antibiotics, H₂-receptor antagonists, and antiprotozoal drugs.

1 14. The method of Claim 12 wherein the pharmaceutical is selected
2 from the group consisting of ampicillin, amoxicillin, cefaclor, cefadroxyl, azithromycin,
3 clarithromycin, demeclocycline·HCl, doxycycline, minocycline·HCl, tetracycline,
4 oxytetracycline, cimetidine, famotidine, nizatidine, ranitidine, sucralfate, metronidazole,
5 atovaquone, and pentamidine·isethionate.

1 15. A method for treating a liver disease comprising:
2 (a) administration of an oral liquid dosage form comprising:

3 (i) a first material selected from the group consisting of a bile
4 acid, an aqueous soluble derivative of a bile acid, a bile acid salt, a bile acid conjugated
5 with an amine by an amide linkage, and combinations thereof ;
6 (ii) a second material selected from the group consisting of an
7 aqueous soluble starch conversion product and an aqueous soluble non-starch
8 polysaccharide; and
9 (iii) water,
10 wherein the first and second materials both remain in solution for all pH values of the
11 solution within a selected range of pH values.

1 16. The method of Claim 15 wherein the dosage form is selected from
2 the group consisting of a syrup, a thick syrup, and a paste.

1 17. The method of Claim 15 wherein the first material is selected from
2 the group consisting of ursodeoxycholic acid, chenodeoxycholic acid, cholic acid,
3 hyodeoxycholic acid, deoxycholic acid, 7-oxolithocholic acid, lithocholic acid,
4 iododeoxycholic acid, iocholic acid, tauroursodeoxycholic acid, taurochenodeoxycholic
5 acid, taurodeoxycholic acid, glycoursoodeoxycholic acid, taurocholic acid, glycocholic
6 acid, their derivatives at a hydroxyl or carboxylic acid group on the steroid nucleus, their
7 salts, or their conjugates with amines.

1 18. The method of Claim 15 wherein the second material is selected
2 from the group consisting of maltodextrin, dextrin, corn syrup corn syrup solid, soluble
3 starch, and dextrans.

1 19. The method of Claim 15 wherein the oral liquid dosage form
2 additionally comprises at least one pharmaceutical in a pharmaceutically effective
3 amount.

1 20. The method of Claim 19 wherein the pharmaceutical is selected
2 from the group consisting of acyclovir, amantadine·HCl, rimantidine·HCl, cidofovir,
3 delavirdine mesylate, didanosine, famciclovir, forscarnet, sodium gancyclovir,
4 idoxuridine, lamivudine, nevirapine, penciclovir, ribavirin, stavudine, trifluridine,
5 valacyclovir·HCl, zalcitabine, zidovudine, indinavir·H₂SO₄, ritonavir,
6 nelfinavir·CH₃SO₃H, saquinavir·CH₃SO₃H, interferons, branched chain amino acid,
7 betamethasone, budesonide, dexamethasone, fludrocortisone·CH₃COOH, flunisolide,
8 prednisone, prednisolone, methyl prednisolone, hydrocortisone, trameinolone,
9 chlorambucil, azathioprine, azacitidine, fluorouracil, mercaptopurine, methotrexate,
10 trientine·2HCl, and catechin.

1 21. The method of Claim 15 wherein the oral liquid dosage form
2 additionally comprises a a branched chain amino acid.

1 22. The method of Claim 21 wherein the branched chain amino acid is
2 selected from the group consisting of leucine, isoleucine, and valine.

1 23. A method for treating gall stones comprising:
2 (a) administration of an oral liquid dosage form comprising:

3 (i) a first material selected from the group consisting of a bile
4 acid, an aqueous soluble derivative of a bile acid, a bile acid salt, a bile acid conjugated
5 with an amine by an amide linkage, and combinations thereof;

6 (b) a second material selected from the group consisting of an
7 aqueous soluble starch conversion product and an aqueous soluble non-starch
8 polysaccharide; and

9 (c) water,

10 wherein the first and second materials both remain in solution for all pH values of the
11 solution within a selected range of pH values.

1 27. The method of Claim 23 wherein the the oral liquid dosage form
2 comprises one or more additional bile acids, aqueous soluble derivatives of bile acid, bile
3 acid salts, and amine-conjugated bile acids conjugated by an amide linkage.

1 28. A method for treating or preventing colorectal adenoma
2 comprising:
3 (a) administration of an oral liquid dosage form comprising:
4 (i) a first material selected from the group consisting of a bile
5 acid, an aqueous soluble derivative of a bile acid, a bile acid salt, a bile acid conjugated
6 with an amine by an amide linkage, and combinations thereof ;
7 (ii) a second material selected from the group consisting of an
8 aqueous soluble starch conversion product and an aqueous soluble non-starch
9 polysaccharide; and
10 (iii) water,
11 wherein the first and second materials both remain in solution for all pH values of the
12 solution within a selected range of pH values.

1 29. The method of Claim 28 wherein the dosage form is selected from
2 the group consisting of a syrup, a thick syrup, and a paste.

1 30. The method of Claim 28 wherein the first material is selected from
2 the group consisting of ursodeoxycholic acid, chenodeoxycholic acid, cholic acid,
3 hyodeoxycholic acid, deoxycholic acid, 7-oxolithocholic acid, lithocholic acid,

4 iododeoxycholic acid, iocholic acid, taouroursodeoxycholic acid, taurochenodeoxycholic
5 acid, taurodeoxycholic acid, glycoursodeoxycholic acid, taurocholic acid, glycocholic
6 acid, their derivatives at a hydroxyl or carboxylic acid group on the steroid nucleus, their
7 salts, or their conjugates with amines.

1 31. The method of Claim 28 wherein the second material is selected
2 from the group consisting of maltodextrin, dextrin, corn syrup corn syrup solid, soluble
3 starch, and dextrans.

1 32. The method of Claim 28 wherein the the oral liquid dosage form
2 comprises one or more additional bile acids, aqueous soluble derivatives of bile acid, bile
3 acid salts, and amine-conjugated bile acids conjugated by an amide linkage.

1 33. The method of Claim 28 wherein the the oral liquid dosage form
2 additionally comprises a least one emulsifying agent.

1 34. The method of Claim 33 wherein the emulsifying agent is selected
2 from the group consisting of guar gum, pectin, acacia, carrageenan, carboxymethyl
3 cellulose sodium, hydroxymethyl cellulose, hydroxypropyl cellulose, methyl cellulose,
4 polyvinyl alcohol, povidone, tragacanth gum, xanthan gum, and sorbitan ester.

1 35. The method of Claim 28 wherein the oral liquid dosage form
2 additionally comprises at least one pharmaceutical in a pharmaceutically effective
3 amount.

1 36. The method of Claim 35 wherein the pharmaceutical is selected
2 from the group consisting of colchicine, sulfinpyrazone, allopurinol, piroxicam, tolmetin-
3 sodium, idomethacin, ibuprofen, diflunisal, mefenamic acid, and mesalamine.

1 37. A method for treating hyperlipidemia comprising:
2 (a) administration of an oral liquid dosage form comprising:
3 (i) a first material selected from the group consisting of a bile
4 acid, an aqueous soluble derivative of a bile acid, a bile acid salt, a bile acid conjugated
5 with an amine by an amide linkage, and combinations thereof ;
6 (ii) a second material selected from the group consisting of an
7 aqueous soluble starch conversion product and an aqueous soluble non-starch
8 polysaccharide; and
9 (iii) water,
10 wherein the first and second materials both remain in solution for all pH values of the
11 solution within a selected range of pH values.

1 38. The method of Claim 37 wherein the dosage form is selected from
2 the group consisting of a syrup, a thick syrup, and a paste.

1 39. The method of Claim 37 wherein the first material is selected from
2 the group consisting of ursodeoxycholic acid, chenodeoxycholic acid, cholic acid,
3 hyodeoxycholic acid, deoxycholic acid, 7-oxolithocholic acid, lithocholic acid,
4 iododeoxycholic acid, iocholic acid, taouroursodeoxycholic acid, taurochenodeoxycholic

5 acid, taurodeoxycholic acid, glycourso-deoxycholic acid, taurocholic acid, glycocholic
6 acid, their derivatives at a hydroxyl or carboxylic acid group on the steroid nucleus, their
7 salts, or their conjugates with amines.

1 40. The method of Claim 37 wherein the second material is selected
2 from the group consisting of maltodextrin, dextrin, corn syrup corn syrup solid, soluble
3 starch, and dextrans.

1 41. The method of Claim 37 wherein the the oral liquid dosage form
2 comprises one or more additional bile acids, aqueous soluble derivatives of bile acid, bile
3 acid salts, and amine-conjugated bile acids conjugated by an amide linkage.

1 42. The method of Claim 37 wherein the the oral liquid dosage form
2 additionally comprises a least one emulsifying agent.

1 43. The method of Claim 38 wherein the emulsifying agent is selected
2 from the group consisting of guar gum, pectin, acacia, carrageenan, carboxymethyl
3 cellulose sodium, hydroxymethyl cellulose, hydroxypropyl cellulose, methyl cellulose,
4 polyvinyl alcohol, povidone, tragacanth gum, xanthan gum, and sorbitan ester.

1 44. The method of Claim 37 wherein the oral liquid dosage form
2 additionally comprises at least one pharmaceutical in a pharmaceutically effective
3 amount.

1 45. The method of Claim 44 wherein the pharmaceutical is selected
2 from the group consisting of atorvastatin-calcium, cerivastatin sodium, fluvastatin
3 sodium, lovastatin, pravastatin sodium, and simvastatin.

1 46. The method of Claim 37 wherein the oral liquid dosage form
2 additionally comprises a dietary fiber.

1 47. The method of Claim 46 wherein the dietary fiber is selected from
2 the group consisting of psyllium, oat gum, soybean fiber, oat bran, corn bran, cellulose
3 and wheat bran.

1 48. A clear aqueous solution comprising:
2 (a) a first material selected from the group consisting of a bile
3 acid, an aqueous soluble derivative of a bile acid, a bile acid salt, and a bile acid
4 conjugated with an amine by an amide linkage;
5 (b) an aqueous soluble non-starch polysaccharide; and
6 (c) water,
7 wherein the first material and the polysaccharide both remain in solution for all pH values
8 of the solution within a selected range of pH values.

1 49. The aqueous solution of Claim 48 wherein the first material is
2 present in a pharmaceutically effective amount.

1 50. The aqueous solution of Claim 48 wherein the solution
2 additionally comprises a pharmaceutically effective amount of a pharmaceutical
3 compound and the pharmaceutical compound remains in solution for all pH values within
4 the selected range.

1 51. The aqueous solution of Claim 50 wherein the pharmaceutical
2 compound is selected from the group consisting of insulin, heparin, calcitonin, ampicillin,
3 amantadine·HCl, rimantadine·HCl, proinsulin, insoluble insulins, and amino acids.

1 52. The aqueous solution of Claim 50 wherein the pharmaceutical
2 compound is selected from the group consisting of octreotide, sildenafil citrate, calcitriol,
3 dihydrotachysterol, ampomorphine, yohimbin, trazodone, acyclovir, cidofovir,
4 delavirdine·mesylate, didanosine, famciclovir, forscarnet sodium, fluorouracil,
5 ganciclovir sodium, idoxuridine, interferon- α , lamivudine, nevirapine, penciclovir,
6 ribavirin, stavudine, trifluridine, valacyclovir·HCl, zalcitabine, zidovudine,
7 indinavir·H₂SO₄, ritonavir, nelfinavir·CH₃SO₃H, saquinavir·CH₃SO₃H, d-penicillamine,
8 chloroquine, hydroxychloroquine, aurothioglucose, gold sodium thiomalate, auranofin
9 levamisole, DTC, isoprinosine, methyl inosine monophosphate, muramyl dipeptide,
10 diazoxide, hydralazine·HCl, minoxidil, dipyridamole, isoxsuprime·HCl, niacin,
11 nylidrin·HCl, phentolamine, doxazosin·CH₃SO₃H, prazosin·HCl, terazocin·HCl,
12 clonidine·HCl, nifedipine, molsidomine, amiodarone, acetylsalicylic acid, verapamil,
13 diltiazem, nisoldipine, isradipine, bepridil, isosorbide·dinitrate,
14 pentaerythrytol·tetranitrate, nitroglycerin, cimetidine, famotidine, nizatidine, ranitidine,
15 lansoprazole, omeprazole, misoprostol, sucralfate, metoclopramide·HCl, erythromycin,

16 alprostadil, albuterol, pirbuterol, terbutaline·H₂SO₄, salmetrol, aminophylline, dyphylline,
17 ephedrine, ethylnorepinephrine, isoetharine, isoproterenol, metaproterenol, n·docromil,
18 oxy triphylline, theophylline, bitolterol, fenoterol, budesonide, flunisolide,
19 beclomethasone·dipropionate, fluticasone·propionate, codeine, codeine sulfate, codeine
20 phosphate, dextromethorphan·HBr, triamcinolone·acetonide, montelukast sodium,
21 zafirlukast, zileuton, cromolyn sodium, ipratropium bromide, nedocromil sodium
22 benzonate, diphenhydramine·HCl, hydrocodone·bitartarate, methadone·HCl,
23 morphine sulfate, acetylcysteine, guaifenesin, ammonium carbonate, ammonium chloride,
24 antimony potassium tartarate, glycerin, terpin·hydrate, colfosceril palmitate,
25 atorvastatin·calcium, cervastatin·sodium, fluvastatin·sodium, lovastatin,
26 pravastatin·sodium, simvastatin, picrorrhizia kurvva, andrographis paniculata, moringa
27 oleifera, albizzia lebeck, adhata vasica, curcuma longa, momordica charantia, gymnema
28 sylvestre, terminalia arjuna, azadirachta indica, tinosporia cordifolia, metronidazole,
29 amphotericin B, clotrimazole, fluconazole, haloprogin, ketoconazole, griseofulvin,
30 itraconazole, terbinafin·HCl, econazole·HNO₃, miconazole, nystatin,
31 oxiconazole·HNO₃, sulconazole·HNO₃, cetirizine·2HCl, dexamethasone, hydrocortisone,
32 prednisolone, cortisone, catechin and its derivatives, glycyrrhizin, glycyrrhizic acid,
33 betamethasone, ludrocortisone·acetate, flunisolide, fluticasone·propionate, methyl
34 prednisolone, somatostatin, lispro, glucagon, acarbose, chlorpropamide, glipizide,
35 glyburide, metformin·HCl, repaglinide, tolbutamide, colchicine, sulfinpyrazone,
36 allopurinol, piroxicam, tolmetin sodium, indomethacin, ibuprofen, diflunisal, mefenamic
37 acid, naproxen, and trientine.

1 53. The aqueous solution of Claim 50 wherein the first material is
2 ursodeoxycholic acid and the pharmaceutical compound is selected from the group
3 consisting of metformin HCl, ranitidine HCl, cimetidine, lamivudine, cetirizine 2HCl,
4 amantadine, rimantadine, sildenafil, apomorphine, yohimbine, trazodone, ribavirin,
5 dexamethasone, hydrocortisone, prednisolone, triamcinolone, cortisone, niacin, catechin
6 and its derivatives, taurine, vitamins, naturally occurring amino acids, and glycyrrhiza
7 extract.

1 54. The aqueous solution of Claim 48 wherein the selected pH range is
2 between approximately 1 and approximately 10 inclusive.

1 55. The aqueous solution of Claim 48 wherein the selected pH range is
2 the range spanned by the prevailing pH values found in the mouth, stomach, and
3 intestines of a mammal.

1 56. The aqueous solution of Claim 48 wherein the selected pH range is
2 the range spanned by the prevailing pH values found in the mouth, stomach, and
3 intestines of a human being.

1 57. The aqueous solution of Claim 48 wherein the selected pH range is
2 a range of pH values obtainable in an aqueous system encountered by the solution during
3 preparation, administration and until absorption in the body to which the solution is
4 administered.

1 58. The aqueous solution of Claim 48 wherein the selected pH range
2 spans all obtainable pH values in an aqueous system.

1 59. The aqueous solution of Claim 48 wherein the first material is
2 selected from the group consisting of ursodeoxycholic acid, chenodeoxycholic acid,
3 cholic acid, hyodeoxycholic acid, deoxycholic acid, 7-oxolithocholic acid, lithocholic
4 acid, iododeoxycholic acid, iocholic acid, tauroursodeoxycholic acid,
5 taurochenodeoxycholic acid, taurodeoxycholic acid, glycoursodeoxycholic acid,
6 taurocholic acid, glycocholic acid, their derivatives at a hydroxyl or carboxylic acid
7 group on the steroid nucleus, their salts, or their conjugates with amines.

1 60. The aqueous solution of Claim 48 wherein the bile acid salt is a
2 product of the reaction of a bile acid and an amine.

1 61. The aqueous solution of Claim 60 wherein the bile acid is selected
2 from the group consisting of ursodeoxycholic acid, chenodeoxycholic acid, cholic acid,
3 hyodeoxycholic acid, deoxycholic acid, 7-oxolithocholic acid, iododeoxycholic acid,
4 iocholic acid, tauroursodeoxycholic acid, taurochenodeoxycholic acid, taurodeoxycholic
5 acid, glycoursodeoxycholic acid, taurocholic acid, glycocholic acid, and their derivatives
6 at a hydroxyl or carboxylic acid group on the steroid nucleus.

1 62. The aqueous solution of Claim 60 wherein the amine is selected
2 from the group consisting of an aliphatic free amine, trientine, diethylene triamine,
3 tetraethylene pentamine, a basic amino acid, arginine, lysine, ornithine, ammonia, an

4 amino sugar, D-glucamine, N-alkylglucamines, a quaternary ammonium derivative,
5 choline, an heterocyclic amine, piperazine, N-alkylpiperazine, piperidine,
6 N-alkylpiperidine, morpholine, N-alkylmorphline, pyrrolidine, triethanolamine, and
7 trimethanolamine.

1 63. The aqueous solution of Claim 48 wherein the bile acid salt is a
2 soluble metal salt of a bile acid, an inclusion compound between the bile acid and
3 cyclodextrin and its derivatives, or an aqueous soluble O-sulfonated bile acid.

1 64. The aqueous solution of Claim 50 wherein the first material is an
2 adjuvant.

1 65. The aqueous solution of Claim 50 wherein the first material is a
2 carrier of the pharmaceutical compound.

1 66. The aqueous solution of Claim 48 wherein the solution further
2 comprises a micelle forming material.

1 67. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a preparation for oral consumption.

1 68. The aqueous solution of Claim 48 wherein the solution is
2 comprised in an enema.

1 69. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a mouthwash.

1 70. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a gargle.

1 71. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a preparation for nasal administration.

1 72. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a preparation for otic administration.

1 73. The aqueous solution of Claim 48 wherein the solution is
2 comprised in an injection.

1 74. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a douche.

1 75. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a topical skin preparation.

1 76. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a cosmetic preparation.

1 77. The aqueous solution of Claim 48 wherein the solution is
2 comprised in a dosage form selected from the group consisting of a syrup, a thick syrup,
3 and a paste.

1 78. A method of preparing an aqueous solution wherein the solution
2 forms no detectable precipitate at any pH value of the solution within a selected range of
3 pH values comprising the steps of:

4 (a) dissolving a bile acid, bile acid salt, or bile acid-amine
5 conjugate in water to form a clear solution;
6 (b) adding at least one aqueous soluble non-starch
7 polysaccharide to the clear solution and allowing it to dissolve to form a clear solution;
8 and
9 (c) optionally adding a pharmaceutically effective amount of a
10 pharmaceutical compound.

1 79. The method of Claim 78 wherein the selected range is all pH
2 values obtainable in an aqueous system.

3 80. The method of Claim 78 wherein the selected range is between
4 approximately pH 1 and approximately pH 10.

1 81. A clear aqueous solution comprising:

1 83. The aqueous solution of Claim 82 wherein the bile acid is selected
2 from the group consisting of ursodeoxycholic acid, chenodeoxycholic acid, cholic acid,

3 hyodeoxycholic acid, deoxycholic acid, 7-oxolithocholic acid, iododeoxycholic acid,
4 iocholic acid, taurooursodeoxycholic acid, taurochenodeoxycholic acid, taurodeoxycholic
5 acid, glycoursoodeoxycholic acid, taurocholic acid, glycocholic acid, and their derivatives
6 at a hydroxyl or carboxylic acid group on the steroid nucleus.

1 84. The aqueous solution of Claim 82 wherein the pH range is selected
2 from about 2 to about 9.

1 85. The aqueous solution of Claim 82 wherein the bismuth compound
2 comprises an aqueous soluble reaction product between a bismuth ion and a chelator.

1 86. The aqueous solution of Claim 85 wherein the chelator is selected
2 from the group consisting of citric acid, tartaric acid, malic acid, lactic acid and eidetic
3 acid and alkalies.

1 87. The aqueous solution of Claim 85 wherein the bismuth compound
2 is selected from the group consisting of an ammonium salt of bismuth sulphate, an
3 ammonium salt of bismuth citrate, and bismuth sodium tartrate.